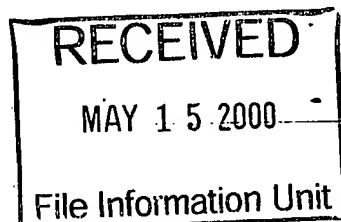


PTO/SB/68 (11-88)

Approved for use through 10/31/99. OMB 0651-0001
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

REQUEST FOR ACCESS OF ABANDONED APPLICATION UNDER 37 CFR 1.14(a)



In re Abandonment of

Abandonment Number

Filed

.07/324481

3-16-89

Group AR Unit

Examiner

Paper No. #9

Assistant Commissioner for Patents
Washington, DC 20231

I hereby request access under 37 CFR 1.14(a)(1) to the abandonment file record of the above-identified ABANDONED application, which for ABANDONMENT:

- ☒ (A) referred to in United States Patent Number 5831076, column _____
- ☐ (B) referred to in an application that is open to public inspection as set forth in 37 CFR 1.11, i.e., Application No. _____, filed _____, on page _____ of paper number _____
- ☐ (C) an application that claims the benefit of the filing date of an application that is open to public inspection, i.e., Application No. _____, filed _____, or
- ☐ (D) an application in which the applicant has filed an authorization to lay open the complete application to the public.

Please direct any correspondence concerning this request to the following address:

Signature

Date

FOR PTO USE ONLY

United States Patent [19]

Springer et al.

[11] Patent Number: 5,831,036

[45] Date of Patent: Nov. 3, 1998

[54] SOLUBLE FRAGMENTS OF HUMAN INTERCELLULAR ADHESION MOLECULE-1

[75] Inventors: Timothy A. Springer, Newton, Mass.; Robert Rothlein; Steven D. Marlin, both of Danbury, Conn.; Michael L. Dustin, University City, Mo.

[73] Assignee: Dana Farber Cancer Institute, Boston, Mass.

[21] Appl. No.: 140,554

[22] Filed: Oct. 25, 1993

Related U.S. Application Data

[60] Division of Ser. No. 515,478, Apr. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 45,963, May 4, 1987, abandoned, Ser. No. 115,798, Nov. 2, 1997, abandoned, Ser. No. 155,943, Feb. 16, 1988, abandoned, Ser. No. 189,815, May 3, 1988, abandoned, Ser. No. 250,446, Sep. 28, 1988, abandoned, Ser. No. 324,481, Mar. 16, 1989, abandoned, Ser. No. 373,882, Jun. 30, 1989, abandoned, and Ser. No. 456,647, Dec. 22, 1989, abandoned.

[51] Int. Cl.⁶ C07K 14/705; A61K 38/17
[52] U.S. Cl. 530/395; 424/185.1; 435/69.3;
530/300; 530/350

[58] Field of Search 530/350, 395,
530/300, 868, 403; 424/88, 184.1, 185.1,
198.1, 199.1; 514/2, 8; 435/69.1, 69.3,
69.6

[56] References Cited

FOREIGN PATENT DOCUMENTS

0319815B1, 16/1989, European Pat. Off.

OTHER PUBLICATIONS

Alexander, E.L. et al., Cutaneous Manifestations of Sjögren's Syndrome, in Jordon, R.E., ed., *Immunologic Diseases of the Skin*, Appleton & Lange, Norwalk, CT, San Mateo, CA, pp. 401-408 (1991).

Anderson, D.C. et al., Leukocyte LFA-1, OKM1, p150,95 deficiency syndrome: functional and biosynthetic studies of three kindreds, *Fed. Proceedings* 44(10):2671-2677 (Jul. 1985).

Anderson, D.C. et al., Leukocyte Adhesion Deficiency: An Inherited Defect in the Mac-1, LFA-1, and p150,95 Glycoproteins, *Ann. Rev. Med.* 38:175-194 (1987).

Bashir, R. et al., Expression of LFA-1/ICAM-1 in CNS lymphomas: possible mechanism for lymphoma homing into the brain, *J. Neuro-Oncol.* 12:103-110 (1992).

Boyd, A.M. et al., Intercellular adhesion molecule 1, (ICAM-1) has a central role in cell-cell contact-mediated immune mechanisms, *Proc. Natl. Acad. Sci. USA* 85:3095-3099 (May 1988).

Byers, V.S. et al., Use of an Anti-Pan T-Lymphocyte Ricin A-Chain Immunotoxin in Steroid-Resistant Acute Graft Versus Host Disease, *Blood* 75(7):1426-1432 (Apr. 1, 1990).

Colonna, R.J. et al., Isolation of a Monoclonal Antibody That Blocks Attachment of the Major Group of Human Rhinoviruses, *J. Virol.* 57(1):7-12 (Jan. 1986).

Cooper, K.D. et al., Immunologic Features of Psoriasis, in Jordon, R.E., ed., *Immunologic Diseases of the Skin*, Appleton & Lange, Norwalk, CT, San Mateo, CA, pp. 611-619 (1991).

Cosimi, A.B. et al., In Vivo Effects Of Monoclonal Antibody To ICAM-1 (CD54) In Nonhuman Primates With Renal Allografts, *J. Immunol.* 144(12):4604-4612 (Jun. 15, 1990).

Cunningham, C. et al., Antibody engineering — how to be human, *TIBTECH* 10 (Apr. 1992).

Dantal, J. et al., Use of monoclonal antibodies in human transplantation, *Curr. Opin. Immunol.* 3:740-747 (1991).

Davignon, D. et al., Lymphocyte function-associated antigen 1 (LFA-1): A surface antigen distinct from Lyt-2.3 that participates in T lymphocyte-mediated killing, *Proc. Natl. Acad. Sci. USA* 78:4535-4539 (Jul. 1981).

Dustin, M.L. et al., Adhesion Of T-Lymphoblasts To Epidermal Keratinocytes Is Regulated By Interferon- γ And Is Mediated By Intercellular Adhesion Molecule 1 (ICAM-1), *J. Exp. Med.* 167:1323-1340 (Apr. 1988).

Dustin, M.L. et al., Induction By IL 1 And Interferon- γ : Tissue Distribution, Biochemistry, And Function Of A Natural Adherence Molecule (ICAM-1), *J. Immunol.* 137(1):245-254 (Jul. 1, 1986).

Dustin, M.L. et al., Lymphocyte Function-associated Antigen-1 (LFA-1) Interaction with Intercellular Adhesion Molecule-1 (ICAM-1) is One of At Least Three Mechanisms for Lymphocyte Adhesion to Cultured Endothelial Cells, *J. Cell Biol.* 107:321-331 (Jul. 1988).

Dustin, M.L. et al., Purified Lymphocyte Function-Associated Antigen 3 Binds To CD2 And Mediates T Lymphocyte Adhesion, *J. Exp. Med.* 165:677-692 (Mar. 1987).

Dustin, M.L. et al., Supergene families meet in the immune system, *Immunol. Today* 9(7&8):213-215 (1988).

Dustin, M.L. et al., T-cell receptor cross-linking transiently stimulates adhesiveness through LFA-1, *Nature* 341:619-624 (Oct. 19, 1989).

Fischer, A. et al., Role Of The LFA-1 Molecule In Cellular Interactions Required For Antibody Production In Humans, *J. Immunol.* 136(9):3198-3203 (May 1, 1986).

Flavin, T. et al., Monoclonal Antibodies Against Intercellular Adhesion Molecule 1 Prolong Cardiac Allograft Survival in Cynomolgus Monkeys, *Transplant. Proc.* 23(1):533-534 (Feb. 1991).

(List continued on next page.)

Primary Examiner—Thomas M. Cunningham
Attorney, Agent, or Firm—Sterne, Kessler, Goldstein & Fox P.L.L.C.

[57] ABSTRACT

The present invention relates to intercellular adhesion molecules (ICAM-1) which are involved in the process through which lymphocytes recognize and migrate to sites of inflammation as well as attach to cellular substrates during inflammation. The invention is directed toward such molecules; screening assays for identifying such molecules and antibodies capable of binding such molecules. The invention also includes uses for adhesion molecules and for the antibodies that are capable of binding them.

4 Claims, 25 Drawing Sheets